DOCUMENT RESUME

ED 276 838 CE 045 899

AUTHOR Usova, George M.; Casteen, Dennis
TITLE Questions in Instructional Materials.
PUB DATE [86]
NOTE 23p.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Education; Boat Operators; Instructional Materials; Marine Technicians; *Maritime Education; *Material Development; Postsecondary Education; *Questioning Techniques; Seafarers; Secondary Education; Teaching Guides; Teaching Methods; *Videotape Recordings; *Vocational Education

ABSTRACT

This guide for the instructional development team provides an understanding of the educational value of using questions in instructional training materials. It also shows examples and illustrations for incorporating questions into instructional materials (print and video) produced by the Shipyard Training Modernization Program. Background information on using questions is provided. Information on question types follows. A chart depicts the interrelationship between type of question and level of mental processing required of the trainee. Bloom's taxonomy as adapted for questions is described. Examples of how questions can be inserted effectively within instructor guides are provided. They serve as a guide to the curriculum developer in developing a conceptual framework for integrating questions into instructor guides. The use of questions in instructional videotape is then addressed. Three script models illustrate several methods of script application for incorporating questions into instructional videotape. They serve as models to the script writer in developing a conceptual framework for integrating questions into the script. Examples of questions in video scripts are provided. Appendixes include a review of the research on placement of questions and a bibliography. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED276838

CE

QUESTIONS IN INSTRUCTIONAL MATERIALS

George M. Usova, Ph.D.

Dennis Casteen

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

G M Usova
Dept of Navy

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CE045899

BEST COPY AVAILABLE

Table Of Contents

Purpose 1

Who Should Use The Guide 1

Background 2

Question Types 3

1. Knowledge 4

2. Comprehension 4

3. Application 5

4. Analysis 5

5. Synthesis 5

6. Evaluation 5

Examples

Print 7

Script/Video 11

Summary 17

Appendix 18

QUESTIONS IN INSTRUCTIONAL MATERIALS: TEXT AND VIDEOTAPE

Purpose

The purposes of this guide are (1) to provide an understanding of the educational value of using questions in instructional training materials and (2) to show examples and illustrations for incorporating questions into instructional materials (print and video) produced by the Shipyard Training Modernization Program.

Questions have been proven to be of significant value when used to guide or stimulate student thinking in the classroom. The training materials produced by the Modernization Program should reflect thoughtful consideration towards designing instruction that will enhance learner motivation and retention of information. Questions, used properly and with discretion, will help us, as instructional designers, to produce the best possible training materials.

Who Should Use This Guide?

All Shipyard Training Modernization Personnel should appreciate the value of using questions in instructional development. At the operational level, however, all curriculum and training materials developers must be knowledgeable on the use of questions. During the development of print materials (instructor guides, student guides), the Subject Matter Experts (SMEs), Industrial Instructional Technologists (IITs), and Shop Instructors should consider the use of questions to generate student interest and participation where appropriate. If the course requires a videotape presentation, the Script Writer should include questions that will parallel the written material whenever possible. Introductory and review questions are particularly effective in videotape training applications. The Television Production Specialist plays a key role in the ultimate effect of any questions included in the script. He must carefully plan shots, pacing, continuity, etc., to accommodate questions and make them most effective.

The combined efforts of the SME, IIT, Script Writer, and Television Producer will ensure that the training materials we produce will incorporate questions that are both meaningful and effective. This guide will provide each member of the instructional development team with a definition of each question type, and includes detailed examples of questions as they might be used in our written lesson material and video production scripts.

Background

Questions have long been recognized as being effective when used for review purposes in the classroom. Additionally, they have been shown to be a powerful influence in student recall and retention when used before and during instruction. A large body of research supports the use of the question as a valuable instructional tool in guiding and directing trainee attention to learning objectives through helping him organize and better understand subject matter content. The following research statements clarify this point:

a. Questions posed before instruction can improve learner retention and enhance recall. Readers selectively engage in mental processng of text information identified as relevant to questions. (Reynolds, Standiford and Anderson, 1979)

b. Questions posed during instructional delivery have long been recognized as being an effective learning aid. The deeper the level of student information processing (through questions), the more meaningful the learning and resistant to forgetting. (Hall, 1983)

While these research findings clearly support the use of questions in print materials, similar conclusions have been reached during research conducted about questions as used in instructional video:

c. Liberal use of titles, questions, and other printed words can improve teaching effectiveness. (May and Lumsdaine, 1958)

d. When a student participates frequently by responding actively to some stimulus (questions), learning of the materials will be increased. (Allen, 1973)

e. Inserted printed questions cause the learner to pay close attention, to look or listen for relevant or crucial clues, to have a "set" or put forth effort to learn, and to respond or practice. (May, 1965)

As can be seen, we should derive optimal instructional use of questions when used at the beginning and during the progression of the instructional materials (print and video), as well as for review at the end. See the Appendix for further discussion on questions.

What are the Question Types?

Questions used in either video or print material are important to generating a high level of quality to our training packages. It is equally important to ensure that the type and level of questions developed are also of high quality for the instructional purposes in mind. Questions must not be developed indiscriminately, simply for their own sake. On the other hand, when questions are developed, the type and level of mental processing must be considered for each application. The chart below depicts the interrelationship between type of question and level of mental processing required of the trainee.

QUESTIONS IN INSTRUCTIONAL MATERIALS:
TEXT AND VIDEO

Difficulty	Level	Type of Question
Simple	Knowledge	Detail
	Knowledge Comprehension	Main Idea
	Comprehension Application	Sequence of Events or Steps
	Application	Cause and Effect
	Synthesis	Anticipating Outcomes
Complex	Evaluation	Making Evaluations

As can be seen from the chart, there are different types of questions that can be developed by the IIT and the Script Writer. The type of question employed should approximately correspond to the level of difficulty required in the objective, i.e., do we want the learner to know simple knowledges, facts, and details or do we want him to focus upon increasingly complex understandings involving applications, analyses, and evaluations? As appropriate, the proper type of question will be chosen to stimulate and guide learning.

Questions can be classified according to the level of knowledge required for the correct response. Benjamin Bloom, an educational researcher, developed a taxonomy of educational objectives that can also be applied to questions. Each level is progressively more complex and each is built on all levels below it.

Beginning with the lowest level, Bloom's taxonomy as adapted for questions is as follows:

1. **Knowledge.** The knowledge level asks, "What does the text say?" and requires only recall or recognition from memory for a response; for example:

   - What is the formula for computing board feet?
   - What is the definition of viscosity?
   - What are the main parts of a business letter?

   In general, questions requiring a simple "yes" or "no" answer should be used sparingly. Simple recall questions can be used in introducing a lesson, or as the first question in a series of questions that progress to a higher level of difficulty.

2. **Comprehension.** The comprehension level asks, "What does the text mean by what it says?" and can include translation (transferring from one set of symbols to another), interpretation (explaining the meaning of something), and extrapolation (inferring, projecting, or extending from known information into an area not known or experienced, or extending the meaning of major ideas beyond the limits of the information presented). For example:

   - Explain the directions for mixing concrete given in the bulletin. (translation)

- What does the table show would be the curing time for concrete poured at 60°F? (interpretation)

- Use your knowledge about concrete work to predict the relative time required to pour the slab illustrated. (extrapolation)

3. **Application.** The application level requires the solving of practical problems through selection and use of ideas, principles, and theories (i.e., using what has been learned in specific situations). For example:

- Apply the principles of induction and magnetism to explain how a generator works.

- Use your knowledge of the basic colors to explain how secondary colors can be made.

4. **Analysis.** The analysis level requires breaking a whole down into its component parts and determining the relationship between the parts; for example:

- Which of the statements in the article on silverbrazing are inconsistent?

- What is causing the car we have tested for malfunctions not to start?

- What relationships exist among the different alloys used to make stainless steel?

5. **Synthesis.** The synthesis level requires putting together parts and elements to form a new whole or pattern (i.e., using concepts, principles, and/or ideas already learned to make a new product). For example:

- What type of piping system should be installed in the new refrigeration system?

- What procedure should be used for welding the new high-strength alloy?

6. **Evaluation.** The evaluation level requires making judgements based on specific criteria rather than opinions; for example:

- How would you evaluate the proposed piping system, using total plant energy consumption as the criterion?

- Does the new welding procedure meet our requirements, based on current specifications?

- Given the following criteria, how would you judge and rank each of the ten displays?

Questions at the analysis, synthesis, and evaluation levels can be used very effectively to summarize class activities or video presentations. Questions at these levels also may be used to guide student thinking in study assignments or at the beginning of a video presentation.

The levels of questions provide guidance in developing a logical sequence of questions. Because each level is based on all levels below it, you can plan the sequence by moving from lower-level to higher-level questions. For example, the application level is based on the knowledge and comprehension levels. Thus, the question sequence would start with the knowledge level, followed by comprehension level, and then application level.

The following pages show examples of how questions can be inserted effectively within Instructor Guides. They serve as a guide to the Curriculum Developer (IIT, SME) in developing a conceptual framework for integrating questions into Instructor Guides.

EXAMPLES OF QUESTIONS IN INSTRUCTOR GUIDES

Modernization Program training materials are based upon an established format. The lesson outline contained in our Instructor Guides should include questions placed intermittently in the outline presentation. As mentioned earlier in the Background, questions may be inserted within this Instructor Guide before, during, or after sections in your Presentation.

The examples that follow illustrate typical applications in instructor guides that have been produced to date in the program.

Excerpts from instructor guides

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
II. PRESENTATION	ASK QUESTIONS (1) and (2) HERE
A. Definitions	
1. Dead-ended cable - cable that is disconnected at one or both ends.	1. Show Transparency 3, DEAD-ENDED CABLE.
2. End sealing - process of covering the cable end to insulate the conductors to prevent moisture from entering cable.	2. Show Transparency 4, END SEALED CABLE. Emphasize end sealing eliminates chances of personal injury.
	ASK QUESTION (3) HERE

Questions

Questions one and two might be asked before the lesson presentation to guide student thinking.

1. What is a dead-ended cable? (knowledge)
2. Why is end sealing performed. (comprehension)

Question three might be asked afterwards to check student comprehension.

3. What type of injury does end sealing prevent? (comprehension)

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
II. PRESENTATION (3 hours)	
A. Organization of Blueprints. Depending on their purpose, blueprints and drawings vary in size, format and content. They usually contain these blocks:	A. Display full size blueprint throughout lesson as a reference. Refer students to Fold-Out 1-A in Student Guide.
1. The title block	1. Show Transparency 1-1. Point out each item in the title block as it is described.
a. Located in the lower right-hand corner of the blueprint.	
b. Contents	
(1) Drawing number	(1) Point out Revision letter within the drawing number.
	ASK QUESTION (1) HERE
(2) Drawing title	
(3) Name of the organization preparing the drawing or blueprint	
(4) Scale	(4) Instructor will point out the fact that the scale is selected to fit the object being drawn and space available. Therefore, measurements should never be taken on a drawing - use the written dimensions. Note that scale on print 1-A is "as noted". This means more than one scale is used.
	ASK QUESTION (2) HERE
(5) Sheet number for multiple sheet drawings.	

ASK QUESTIONS (3) and (4) HERE

Questions

Questions one and two are used as instructional tools during the lesson presentation.

1. What might the Revision letter indicate? (comprehension)
2. Why should measurements never be taken directly from a drawing? (comprehension)

Questions three and four are used afterwards to check student knowledge after the presentation.

3. What information is included in the title block? (knowledge)
4. Where is the title block located? (knowledge)

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
b. Box end wrench - closed on both ends. This wrench is less likely than other wrenches to slip off the work.	
c. Combination wrench - has the advantages of both the box and open end wrenches.	c. Explain that the combination wrench has one open end and one closed end. One end might be offset for clearance over nearby parts and machinery.
	ASK QUESTION (1) HERE
E. Adjustable (or crescent) Wrench	E. Refer students to Figure 4, Information Sheet 2, in student guide and discuss purpose of the adjustable wrench. Display and circulate adjustable wrench to students.
	ASK QUESTION (2) HERE
F. How to Use a Solid Wrench	
1. Select the proper size wrench. Wrenches are marked by sizes according to the size nut they fit.	1. Refer students to Figure 5, Information Sheet 2, in student guide. Explain that size designations of open end and box wrenches refer to the distance across the flats of the nut.
2. Make certain the wrench is in good condition.	
3. Wipe off your hands and the wrench, removing any oil or grease that could cause the wrench to slip.	
4. Place the wrench squarely on the nut. Don't tilt the jaws.	
5. Pull on the wrench; don't push. If pushing is unavoidable, use the open palm of the hand. Tighten the bolt or nut until it is snug.	5. Refer students to Figure 6, Information Sheet 2, in student guide.
	ASK QUESTION (3) HERE

Questions

Again, questions one and two are used as instructional tools to assess trainee understandings during the lesson.

1. What type of wrench should be selected for applying high torque to a nut or bolt? (application)
2. What part of an adjustable wrench is movable? (knowledge)

Question three is used after the presentation to generate a higher level of student thinking.

3. What might occur as a result of pushing rather than pulling on a solid wrench? (synthesis)

OUTLINE OF INSTRUCTION	INSTRUCTOR/STUDENT ACTIVITY
D Installing Stuffing Tubes	
1. Use cable assignment chart to determine correct tube size for a given cable. a. Chart contained in Electric Plant Installation Standard Methods, S9300-AW-EDC-010/EPISM b. Also printed for convenience in Electrical Information Handbook c. Stuffing tubes manufactured in 24 sizes designated by letters "A" through "Z," plus "AA" and "BB" (1) Size "A" is smallest. (2) Size "BB" is largest. (3) The letters "H," "I," "O," and "Q" are not used in order to avoid confusion.	1. Refer students to Information Sheets 3 and 4 in Student Guide and discuss purpose of cable assignment charts. Explain use of references by selecting examples and follow through with students. c. Display Transparency 4, excerpt of EPISM 3B5, columns 1-5. Display Transparency 5.
2. Use the hole spacing chart to determine the correct hole size to be drilled for a given cable.	2. Display Transparencies 5 and 6. Refer to Information Sheets 5 and 6 in Student Guide and explain use of these charts for hole sizes as well as for hole spacing.
3. Use the hole spacing chart to determine the correct spacing of stuffing tube holes.	3. Display Transparencies 6 and 7. Refer to Information Sheets 6, 7 and 8 in Student Guide and explain use of these charts.
4. Lay out position of installation holes. a. Consider existing tubes' locations. b. Consider natural, smooth flow pathway for cable. c. Observe spacing requirements cited in hole spacing chart. d. Mark location of hole centers with punch.	4. Discuss layout of new installation. Refer to Figure 4, Information Sheet 9, in Student Guide. Display Transparency 8, example layout. ASK QUESTION (1) HERE Discuss adding tubes to existing installation. Refer to Figure 5, Information Sheet 9, in Student Guide and display Transparency 9. ASK QUESTION (2) HERE

Questions

Question one requires the student to analyze a working procedure.

1. Why should cable follow a natural, smooth flow pathway? (analysis)

Question two checks student knowledge.

2. What procedure should be followed when laying out the position of installation holes? (knowledge)

Videotape Applications

As mentioned earlier in this guide, questions have also been proven to be effective when used in instructional videotape. The purposes (review, guide and direct thinking, etc.) are the same ones that apply to print applications; question types and objectives are also similar to those used in print materials. The author, however, is the Script Writer, and it is important that he understand the principles and techniques that are unique to video presentations.

Videotape allows the learner to <u>see</u> and <u>hear</u> questions simultaneously. This possibility adds a new dimension to the selection and placement of questions within the video script. Students should be given the opportunity to read and hear the question, and then pause, think, and mentally answer the question before the videotape continues. The question-pause-answer method is one method in which questions used for review purposes at the end of a videotape are presented aurally and in print on the screen, followed by a three-second pause and then the narrated and visual answer. This method is one of several that can be used during script development.

The three script models that follow illustrate several methods of script application for incorporating questions into instructional videotape. They serve as models to the Script Writer in developing a conceptual framework for integrating questions into the script.

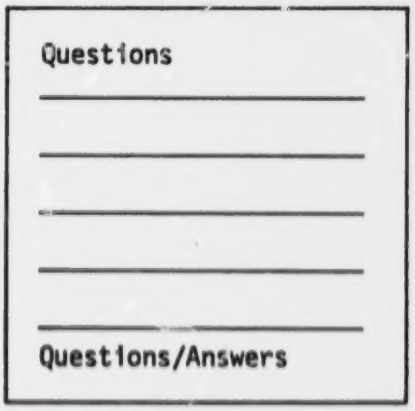
Methods for Script Applications

Model A

Questions used at the beginning of this script would serve to stimulate and direct student thinking.

Questions used at the end would be used for review/test purposes and could be constructed using the question-pause-answer method.

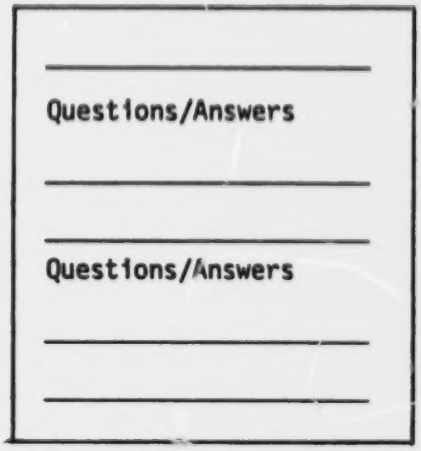
Model A



Model B

Here, questions are used during the video presentation, and they serve to stimulate, direct and test the learner. Again, the question-pause-answer technique could be used.

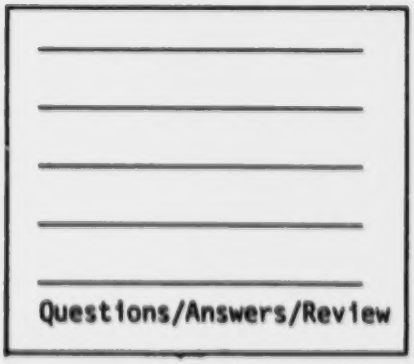
Model B



Model C

In this example, the questions are limited to the end of the video script. They are effective for review/test purposes, and should address highlights/important points in the videotape.

Model C



EXAMPLES OF QUESTIONS IN VIDEO SCRIPTS

Excerpts from video scripts

Diagram deck and overhead clearance

- Correct clearance.

In general, overhead cableways must be at least 6 feet, 4 inches above the deck, for example. All clearances specified in technical manuals or design drawings must be observed.

Watertight bulkhead illustration (maybe from Stuffing Tubes or MCPs)

- Watertight integrity.

The integrity of watertight bulkheads must be maintained, by using approved watertight penetrators for single and multiple cables. If you are uncertain, check the blueprint and see if the "WT" designation for a watertight bulkhead appears.

ASK QUESTION (1) and (2) HERE

Drawing of steel tape next to cable bend around a duct or something.

- Good cable estimates.

Measure sections of the run as necessary to make a good estimate of the length required, to make sure you allow enough for the run.

Cartoon, with cables draped over pipe and tied up with plastic tie-wrap (X out).

-Standard hardware.

Never use any device not approved by NAVSEA for supporting or securing cables in cableways.

ASK QUESTION (3) HERE

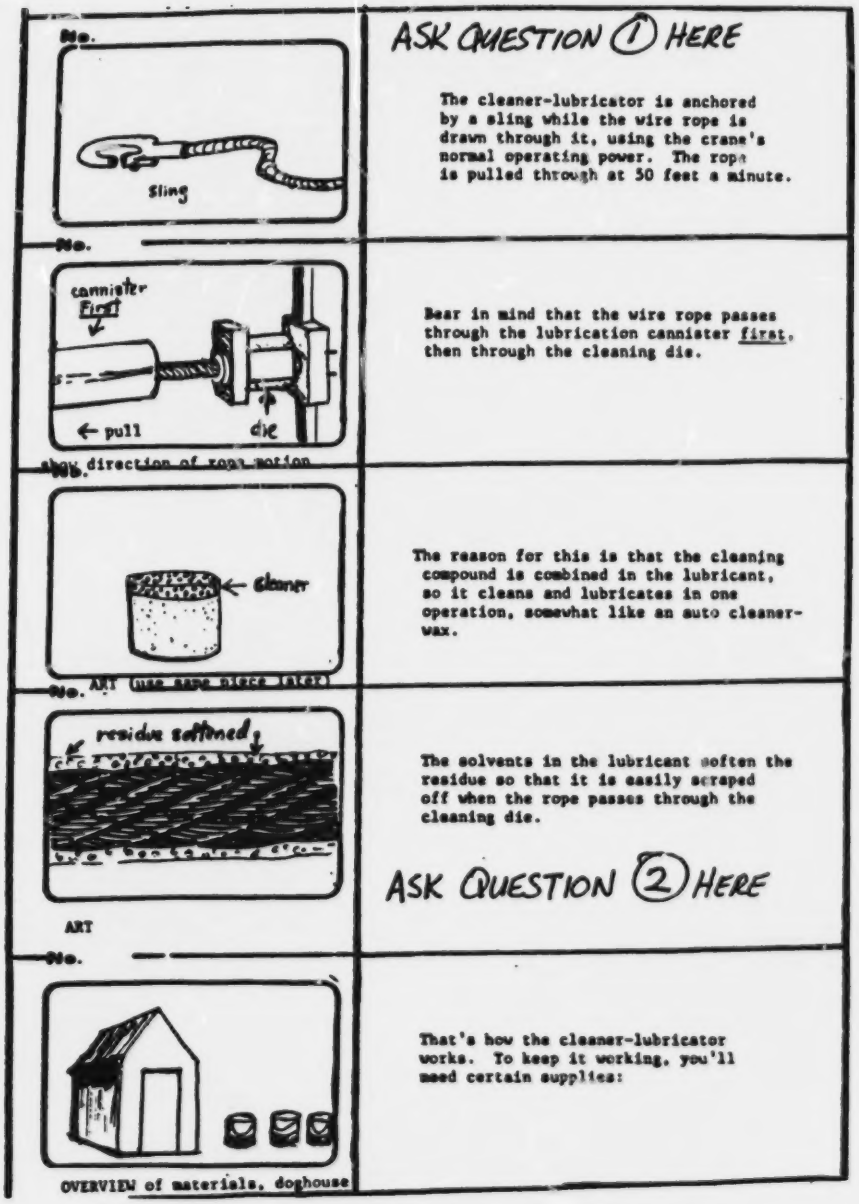
Questions

Questions one and two are used to generate student interest and test their knowledge.

1. In general, how far above the deck should overhead cableways be? (knowledge)
2. What designation is used on a blueprint to indicate a watertight bulkhead? (knowledge)

Question three is used to emphasize an important point or achieve a learning objective.

3. Who must approve devices used for supporting or securing cables in cableways. (comprehension)


No.
sling
ASK QUESTION (1) HERE
The cleaner-lubricator is anchored by a sling while the wire rope is drawn through it, using the crane's normal operating power. The rope is pulled through at 50 feet a minute.
No.
cannister
First
← pull
die
show direction of rope motion
Bear in mind that the wire rope passes through the lubrication cannister first, then through the cleaning die.
No.
cleaner
ART (use same piece twice)
The reason for this is that the cleaning compound is combined in the lubricant, so it cleans and lubricates in one operation, somewhat like an auto cleaner-wax.
No.
residue softened
ART
The solvents in the lubricant soften the residue so that it is easily scraped off when the rope passes through the cleaning die.
ASK QUESTION (2) HERE
No.
OVERVIEW of materials, doghouse
That's how the cleaner-lubricator works. To keep it working, you'll need certain supplies:

Questions

Question one is used to generate student interest.

Question two is used to test student knowledge and may assess a learning objective.

1. Why is wire rope drawn through the lubrication cannister first? (comprehension)
2. At what rate is the wire rope pulled through the cleaner-lubricator? (knowledge)

TITLE STEAM	DATE 28 Sept 1984
SUBJECT UNIT 1 - LESSON 1.1	PAGE 5 OF 10

5 VIDEO	AUDIO
	into a liquid by the process of condensation. The amount of heat given off when steam condenses back to a liquid is called the Latent Heat of Condensation.
Pot of boiling water giving off vapor.	The cloud vapor you see coming off a pot of boiling water is steam that has begun to lose heat forming water droplets because of condensation.
Diagram #12.	This visible cloud is called saturated steam. It is used aboard ship to operate most of the auxiliary equipment and in various types of heaters.
Diagram #13.	However, saturated steam is not suitable for use in main propulsion turbines as the water particles tend to wear out the turbine blades. And, saturated steam conducts and loses heat rapidly. Ship's boilers, therefore, are designed to produce both saturated and superheated steam.
Diagram #14.	
Diagram #15.	
Diagram #16.	Superheated steam is dry steam that has had the water particles removed by adding additional heat. Therefore, you can't see superheated steam.
Diagram #17.	Because superheated steam causes very

ASK QUESTIONS ①, ② and ③ HERE

Questions

Questions one, two and three are used at the end of this video segment for review purposes and to emphasize important points or objectives of the lesson.

1. What is the difference between saturated steam and superheated steam? (comprehension)
2. Why would superheated steam tend to wear out turbine blades? (application)
3. Why is superheated steam especially dangerous? (knowledge)

Summary

"To question well is to teach well." Socrates would have agreed with this statement. He used questioning to the exclusion of all other methods. Clearly, questioning is an effective way to stimulate student motivation and participation. Questioning provides for involvement of all students. In addition, it focuses student attention and develops interest and curiosity. The effective use of the questioning technique provides students with opportunities to practice self-expression and to have their knowledge used as a class resource. At the same time it allows variety to be added to the lesson.

Questions can be used for specific purposes within the lesson content or video presentation. They can be used to introduce, summarize, or review a lesson; to clarify points previously made; or to bring up points omitted. Other uses include developing new insights, promoting understanding, developing attitudes and values, and teaching students to use ideas rather than simply memorize them.

Questioning can provide important evaluation information. The students' preparation for the lesson can be tested. Questions during the introduction can serve as a pretest of students' knowledge level. Also, using questions during the lesson can provide immediate feedback on how student learning is progressing. Incorporating questions in the lesson summary or review can provide at least a partial evaluation of the extent to which the instructional objectives have been achieved by students.

Everyone who develops instructional materials in the Shipyard Training Modernization Program -- SME, IIT, Script Writer, and Television Producer -- should give careful thought and consideration towards developing and including questions in instructor guides, student guides, and videotapes that reflect the highest standards of instructional technique. This program has the capability and resources to set a training standard for all of industry. The incorporation of questions in both our written and video lesson material will help ensure that this potential is fully realized.

APPENDIX

RESEARCH REVIEW

Harris (1970) emphasizes that questions are useful not only as an indicator of competency in comprehension, but as a basis of strategies for teaching comprehension. While it is generally agreed upon that question placement affects students' comprehension, it is not agreed upon as to where the placement of questions should be. A review of the research reveals that numerous studies have been conducted in this area. Their findings should be a primary consideration for any curriculum developer or instructor interested in developing effective questioning strategies.

Research Showing the Advantages of Prequestioning

The first reported study which dealt with the effect of prequestioning techniques on reading comprehension was conducted in 1921 by Germane. He compared the comprehension levels of students who had been given a set of questions prior to their reading the selection as opposed to those who had been allotted the same amount of time to re-read the selection. Reported mean scores were 14.3 for the experimental group and 13.9 for the control group. This was a one month mean difference in favor of the group that had been exposed to the prequestioning treatment. Germane (1921) also conducted a replication of the above study using 88 college sophomores and obtained identical results. Based on these findings, Germane concluded that it would be more advantageous to present questions to students before reading an article than to allocate the same amount of time having students read the selection.

The findings of Germane prompted similar experiments. In an effort to determine the reliability of the Germane study, Holmes (1931) conducted a study with the same stated purpose. In addition, Holmes was interested in the effect of prequestioning on delayed recall and the interaction of question placement and the nature of the material presented. Results showed that both experimental groups scored higher than did the two control groups. On the basis of these results, Holmes concluded that since reading guided by

prequestions surpasses rereading without questions in both the immediate recall and delayed recall of answers to questions it is beneficial to provide students with questions for guidance in reading material.

Yoakum and Truby (1926) were concerned with the effect on comprehension of prequestions that were general in nature. Reported results indicated that the experimental group which had received the prequestions scored a grade equivalent of seven months higher than did the control group that received no stated purposes.

Distad (1927) conducted a unique study which sought to incorporate several facets of the previously mentioned experimental studies. More specifically, the four treatments were: 1) reading to find answers to eight specific prequestions presented by the experimenter, 2) reading to find answers to eight specific questions raised by the subjects themselves, 3) reading to find the answer to a general problem, and 4) reading with no direction. The following results were obtained. Group I scored 15.0, Group II - 14.3, Group III - 13.0, and Group IV - 11.8. Basing conclusions on these results, Distad stated that directed reading aids in the development of reading habits which increase comprehension.

Washburne (1929) sought to determine the value of placing prequestions in various positions. A conclusion of the study was that question location is an important variable in the mastery of material and that the best placement is the grouping of all questions at the beginning of the selection, while the worst placement in the grouping of all questions at the end of the selection.

Shores (1960) was also interested in the recollection of information which was not specifically asked in prequestioning treatment. Group one was instructed to read the selection and was given no stated purpose. Group two was instructed to read the selection to restate the major events in their proper sequence. Group three was instructed to read the selection in order to find the main idea. Results indicated the group that had been instructed to read the material for the main idea achieved the highest raw score, while the group that had been given no direction achieved the lowest. Shores concluded

that presenting one general question to students prior to their reading the material aided in the recall of factual information. Ballard (1965) sought to determine the effectiveness of different types of prequestions on the comprehension of a story-type reading selection. Group A received prequestions that contained references to specific detail from the selection, Group B received prequestions that were concerned with the main idea, while Group C received no prequestions. Based on the results, Ballard concluded that guiding (Group A) questions resulted in the highest comprehension, while motivating questions (Group B) were more beneficial than no prequestions.

Henderson (1964) was interested in comparing the effect on comprehension of prequestions generated by the student himself as opposed to prequestions generated by the teacher. Group one was asked to provide for itself a collective purpose prior to reading the selection. Group two received a teacher generated purpose for reading the selection; Group three received no stated purpose. Results indicated that the most effective prequestions are those that are generated by the student himself. However, a teacher generated prequestion is more advantageous than the use of no prequestions.

REFERENCES

Allen, William H. Research in Educational Media. Educational Media Yearbook 1973, James W. Brown, ed., 1973.

Ballard, G.L. The effect of guiding and motivating questions upon the reading comprehension of fourth and fifth graders. Dissertation Abstracts, 1965, 25, 4568.

Distad, H.W. A study of the reading performance of pupils under different conditions on different types of materials. Journal of Education Psychology, 1927, 18, 247-258.

Germane, C.E. Outlining and summarizing compared with rereading as methods of studying. Report of the society's committee on silent reading. Twentieth yearbook of the national society for the study of education, Part II. Univ. of Chicago, 1921.

Hall, K. A. Content structuring and question asking for computer-based instruction. Journal of Computer-Based Instruction, 1983, pp. 1-7.

Harrington, L. Review questions and covert response in instructional videotape. University of Hawaii, unpublished masters thesis, 1985.

Harris, J.J. How to increase reading ability (5th ed.) New York; David McKay Company, 1970.

Henderson, E.H. A study of individually formulated purposes for reading in relation to reading achievement comprehension and purpose attainment. Dissertation Abstracts, 1964, 24, 5529.

Holmes, E. Reading guided by questions versus careful reading and rereading without questions. School Review, 1931, 39.

May, Mark A. and A. A. Lumsdaine. Learning from Films. Yale University Press, 1958.

May, Mark A. Enhancements and Simplifications of Motivational and Stimulus Variables in Audiovisual Instructional Materials. U. S. Office of Education Control No. OE 5-16-006, 1965.

National Center for Research in Vocational Education. Professional Teacher Education Series, Module C-12, Employ Oral Questioning Techniques. American Association for Vocational Instructional Materials, 1977, pp. 6-8.

Reynolds, Ralph E. and Richard C. Anderson. Influence of questions on the allocation of attention during reading. Technical Report No. 183, Center for the Study of Reading. Urbanna, Illinois, October, 1980, p. 9.

Shores, H.J. Reading of science for two separate purposes as perceived by sixth grade students and able adult readers. Elementary English, 1960, 37, 461-468.

Washburne, J.N. The use of questions in social studies material. Journal of Educational Psychology, 1929, 20, 321-359.

Yoakum, G.A. & C. Truby. The effects of certain practice exercises in reading. School of Education Journal, 1926, 1, 60-61.